

**WHAT IS CLAIMED IS:**

- 1        1. A method for communicating comprising:  
2                controlling a user interface presented by a web browser comprising:  
3                        causing a web server to push an asynchronous message to the web  
4                                browser;  
5                wherein the web browser presents a user interface change in response to the  
6                        asynchronous message.
  
- 1        2. The method of claim 1 further comprising:  
2                generating the asynchronous message.
  
- 1        3. The method of claim 1 further comprising:  
2                preparing to receive the asynchronous message.
  
- 1        4. The method of claim 3 wherein the preparing comprises:  
2                causing the web browser to provide a wait request to the web server, the wait  
3                        request being associated with the web browser;  
4                identifying a source of the asynchronous message; and  
5                associating the wait request with the source, wherein the associating identifies  
6                        the web browser as a recipient of the asynchronous message.
  
- 1        5. The method of claim 1 further comprising:  
2                causing the web browser to provide a wait request to the web server, the wait  
3                        request being associated with the web browser;  
4                identifying a source of the asynchronous message; and  
5                associating the wait request with the source, wherein the associating identifies  
6                        the web browser as a recipient of the asynchronous message.
  
- 1        6. The method of claim 1 further comprising:  
2                causing the web browser to provide a wait request to the web server, the wait  
3                        request being associated with the web browser;  
4                generating the asynchronous message, the asynchronous message identifying  
5                        the wait request, wherein the identifying identifies the web browser as  
6                                a recipient of the asynchronous message; and

7 providing the asynchronous message to the web server.

1       7.     The method of claim 6 wherein causing the web browser to provide the  
2 wait request comprises:

3           downloading requesting instructions to the web browser, wherein  
4           the downloading causes the web browser to execute the requesting  
5           instructions.

1       8.     The method of claim 6 further comprising:

2           storing a reference to a callback function with information from the wait  
3           request; and

4           using the reference to call the callback function when the asynchronous  
5           message is provided to the web server, wherein the callback function  
6           pushes the asynchronous message.

1       9.     The method of claim 8 further comprising:

2           providing the callback function with context information, the context  
3           information identifying the web browser.

1       10.    The method of claim 6 further comprising:

2           assigning the wait request to a connection between the web server and a  
3           business process server; and

4           listening to the connection for the asynchronous message.

1       11.    The method of claim 6 further comprising:

2           assigning the wait request to a session between the web server and a business  
3           process server, the session being associated with a connection; and  
4           listening to the connection for the asynchronous message for the session.

1       12.    The method of claim 1 wherein causing the web server to push the  
2 asynchronous message comprises:

3           calling a callback function associated with the web browser when the  
4           asynchronous message is received, wherein the callback function  
5           pushes the asynchronous message.

1       13.    The method of claim 12 further comprising:

2           storing a reference to the callback function; and  
3           using the reference for calling the callback function.

1       14.   The method of claim 13 further comprising:  
2           storing a second reference to context information, the context information  
3           identifying the web browser; and  
4           using the second reference for providing the context information to the  
5           callback function.

1       15.   The method of claim 1 wherein  
2           the user interface change comprises at least one of a group consisting of the  
3           following:  
4           causing a first user interface object to move to visually capture a user's  
5           attention;  
6           causing a second user interface object to issue a sound to capture the  
7           user's attention;  
8           presenting a screen pop of data; and  
9           bringing a web browser window to front of screen.

1       16.   A method for communicating comprising:  
2           causing a web server to push an asynchronous message to a web browser,  
3           wherein  
4           the web browser performs an action in response to the asynchronous  
5           message.

1       17.   The method of claim 16 wherein  
2           the asynchronous message includes an action instruction to cause the web  
3           browser to perform the action.

1       18.   The method of claim 16 wherein the performing the action comprises  
2           performing at least one of a group consisting of the following:  
3           causing a first user interface object to move to visually capture a user's  
4           attention;  
5           causing a second user interface object to issue a sound to capture the user's  
6           attention;

7 presenting a screen pop of data; and  
8 bringing a web browser window to front of screen.

1 19. A method for communicating comprising:  
2 establishing a first connection between a web browser and a web server;  
3 establishing a second connection between the web server and a business  
4 process server;  
5 controlling a user interface presented by the web browser comprising:  
6 registering the web browser with the business process server;  
7 providing the web server with an asynchronous message to push to the  
8 web browser, the providing being performed by the business  
9 process server;  
10 and  
11 causing the web server to push the asynchronous message to the web  
12 browser;  
13 wherein the web browser performs a user interface change in response to the  
14 asynchronous message.

1 20. A method for communicating comprising:  
2 controlling a user interface presented by a web browser comprising:  
3 registering the web browser as available to receive an asynchronous  
4 message, wherein  
5 the web browser is not blocked waiting for the asynchronous  
6 message;  
7 and  
8 causing a web server to push the asynchronous message to the web  
9 browser;  
10 wherein the web browser presents a user interface change in response to the  
11 asynchronous message.

1 21. A method for communicating comprising:  
2 controlling a user interface presented by a web browser comprising:  
3 causing the web browser to provide a wait request to a web server, the  
4 wait request being associated with the web browser;

5 identifying a source of an asynchronous message;  
6 associating the wait request with the source, wherein the associating  
7 identifies the web browser as a recipient of the asynchronous  
8 message; and  
9 pushing the asynchronous message to the web browser;  
10 wherein the browser presents a user interface change in response to the  
11 asynchronous message.

1 22. A method for communicating comprising:  
2 controlling a user interface presented by a web browser comprising:  
3 causing the web browser to provide a wait request to a web server,  
4 wherein  
5 the wait request is associated with the web browser and a target  
6 from which an asynchronous message originates;  
7 generating the asynchronous message, the asynchronous message  
8 identifying the web browser as a recipient of the asynchronous  
9 message, the generating being performed by the target;  
10 providing the asynchronous message to the web server; and  
11 causing the web server to push the asynchronous message to the web  
12 browser;  
13 wherein the web browser presents a user interface change in response to the  
14 asynchronous message.

1 23. A computer program product comprising:  
2 controlling instructions to control a user interface presented by a web browser  
3 comprising:  
4 pushing instructions to cause a web server to push an asynchronous  
5 message to the web browser, wherein  
6 the web browser presents a user interface change in response to  
7 the asynchronous message;  
8 and  
9 a computer-readable medium for storing the controlling instructions and the  
10 pushing instructions.

1       24. The computer program product of claim 23 further comprising:  
2           providing instructions to cause the web browser to provide a wait request to  
3               the web server, the wait request being associated with the web  
4               browser;  
5           identifying instructions to identify a source of the asynchronous message; and  
6           associating instructions to associate the wait request with the source, wherein  
7               the associating identifies the web browser as a recipient of the  
8               asynchronous message;  
9           wherein the computer-readable medium further stores the providing  
10          instructions, the identifying instructions, and the associating  
11          instructions.

1       25. The computer program product of claim 23 further comprising:  
2           request providing instructions to cause the web browser to provide a wait  
3               request to the web server, the wait request being associated with the  
4               web browser;  
5           generating instructions to generate the asynchronous message, the  
6               asynchronous message identifying the wait request, wherein the  
7               identifying identifies the web browser as a recipient of the  
8               asynchronous message; and  
9           message providing instructions to provide the asynchronous message to the  
10          web server;  
11          wherein the computer-readable medium further stores the request providing  
12          instructions, the generating instructions, and the message providing  
13          instructions.

1       26. The computer program product of claim 25 further comprising:  
2           storing instructions to store a reference to a callback function with information  
3               from the wait request; and  
4           using instructions to use the reference to call the callback function when the  
5               asynchronous message is provided to the web server, wherein the  
6               callback function pushes the asynchronous message;  
7           wherein the computer-readable medium further stores the storing instructions

8 and the using instructions.

1 27. The computer program product of claim 26 further comprising:  
2 context providing instructions to provide the callback function with context  
3 information, the context information identifying the web browser;  
4 wherein the computer-readable medium further stores the context providing  
5 instructions.

1 28. The computer program product of claim 25 further comprising:  
2 assigning instructions to assign the wait request to a connection between the  
3 web server and a business process server; and  
4 listening instructions to listen to the connection for the asynchronous message;  
5 wherein the computer-readable medium further stores the assigning  
6 instructions and the listening instructions.

1 29. The computer program product of claim 23 wherein  
2 the pushing instructions comprise:  
3 calling instructions to call a callback function associated with the web  
4 browser when the asynchronous message is received, wherein  
5 the callback function pushes the asynchronous message;  
6 and  
7 the computer-readable medium further stores the calling instructions.

1 30. The computer program product of claim 29 further comprising:  
2 reference storing instructions to store a reference to the callback function; and  
3 reference using instructions to use the reference for calling the callback  
4 function;  
5 wherein the computer-readable medium further stores the reference storing  
6 instructions and the reference using instructions.

1 31. The computer program product of claim 30 further comprising:  
2 context storing instructions to store a second reference to context information,  
3 the context information identifying the web browser; and  
4 context using instructions to use the second reference for providing the context  
5 information to the callback function;

6 wherein the computer-readable medium further stores the context storing  
7 instructions and the context using instructions.

1 32. The computer program product of claim 23 further comprising:  
2 user interface changing instructions configured to perform at least one of a  
3 group consisting of the following:  
4 cause a first user interface object to move to visually capture a user's  
5 attention;  
6 cause a second user interface object to issue a sound to capture the  
7 user's attention;  
8 present a screen pop of data; and  
9 bring a web browser window to front of screen;  
10 wherein the computer-readable medium further stores the user interface  
11 changing instructions.

1 33. A computer program product comprising:  
2 controlling instructions to control a user interface presented by a web browser  
3 comprising:  
4 registering instructions to register the web browser as available to  
5 receive an asynchronous message, wherein  
6 the web browser is not blocked waiting for the asynchronous  
7 message;  
8 and  
9 pushing instructions to cause a web server to push the asynchronous  
10 message to the web browser, wherein the web browser presents  
11 a user interface change in response to the asynchronous  
12 message;  
13 and  
14 a computer-readable medium for storing the controlling instructions, the  
15 registering instructions, and the pushing instructions.

1 34. A computer system comprising:  
2 a processor;  
3 a memory, the memory storing instructions for executing on the processor, the

4           instructions comprising:  
5           controlling instructions to control a user interface presented by a web  
6           browser comprising:  
7           pushing instructions to cause a web server to push an  
8           asynchronous message to the web browser, wherein the  
9           web browser presents a user interface change in  
10          response to the asynchronous message.

1        35. The computer system of claim 34 wherein the instructions further  
2 comprise:

3           providing instructions to cause the web browser to provide a wait request to  
4           the web server, the wait request being associated with the web  
5           browser;  
6           identifying instructions to identify a source of the asynchronous message; and  
7           associating instructions to associate the wait request with the source, wherein  
8           the associating identifies the web browser as a recipient of the  
9           asynchronous message.

1        36. The computer system of claim 34 wherein the instructions further  
2 comprise:

3           request providing instructions to cause the web browser to provide a wait  
4           request to the web server, the wait request being associated with the  
5           web browser;  
6           generating instructions to generate the asynchronous message, the  
7           asynchronous message identifying the wait request, wherein the  
8           identifying identifies the web browser as a recipient of the  
9           asynchronous message; and  
10          message providing instructions to provide the asynchronous message to the  
11           web server.

1        37. The computer system of claim 36 wherein the instructions further  
2 comprise:

3           storing instructions to store a reference to a callback function with information  
4           from the wait request; and

5           using instructions to use the reference to call the callback function when the  
6           asynchronous message is provided to the web server, wherein the  
7           callback function pushes the asynchronous message.

1           38.   The computer system of claim 37 wherein the instructions further  
2           comprise:

3                 context providing instructions to provide the callback function with context  
4                 information, the context information identifying the web browser.

1           39.   The computer system of claim 36 wherein the instructions further  
2           comprise:

3                 assigning instructions to assign the wait request to a connection between the  
4                 web server and a business process server; and  
5                 listening instructions to listen to the connection for the asynchronous message.

1           40.   The computer system of claim 34 wherein the pushing instructions  
2           comprise:

3                 calling instructions to call a callback function associated with the web browser  
4                 when the asynchronous message is received, wherein the callback  
5                 function pushes the asynchronous message.

1           41.   The computer system of claim 40 wherein the instructions further  
2           comprise:

3                 reference storing instructions to store a reference to the callback function; and  
4                 reference using instructions to use the reference for calling the callback  
5                 function.

1           42.   The computer system of claim 41 wherein the instructions further  
2           comprise:

3                 context storing instructions to store a second reference to context information,  
4                 the context information identifying the web browser; and  
5                 context using instructions to use the second reference for providing the context  
6                 information to the callback function.

1           43.   The computer system of claim 34 wherein the instructions further

2 comprise:

3 user interface changing instructions configured to perform at least one of a  
4 group consisting of the following:  
5 cause a first user interface object to move to visually capture a user's  
6 attention;  
7 cause a second user interface object to issue a sound to capture the  
8 user's attention;  
9 present a screen pop of data; and  
10 bring a web browser window to front of screen.

1 44. A computer system comprising:

2 a processor;  
3 a memory, the memory storing instructions for executing on the processor, the  
4 instructions comprising:  
5 controlling instructions to control a user interface presented by a web  
6 browser comprising:  
7 registering instructions to register the web browser as available  
8 to receive an asynchronous message, wherein  
9 the web browser is not blocked waiting for the  
10 asynchronous message;

11 and

12 pushing instructions to cause a web server to push the asynchronous  
13 message to the web browser, wherein the web browser presents  
14 a user interface change in response to the asynchronous  
15 message.

1 45. A system comprising:

2 controlling means for controlling a user interface presented by a web browser  
3 comprising:  
4 pushing means for causing a web server to push an asynchronous  
5 message to the web browser, wherein the web browser presents  
6 a user interface change in response to the asynchronous  
7 message.

1       46. The system of claim 45 further comprising:  
2           providing means for causing the web browser to provide a wait request to the  
3           web server, the wait request being associated with the web browser;  
4           identifying means for identifying a source of the asynchronous message; and  
5           associating means for associating the wait request with the source, wherein the  
6           associating identifies the web browser as a recipient of the  
7           asynchronous message.

1       47. The system of claim 45 further comprising:  
2           request providing means for causing the web browser to provide a wait request  
3           to the web server, the wait request being associated with the web  
4           browser;  
5           generating means for generating the asynchronous message, the asynchronous  
6           message identifying the wait request, wherein the identifying identifies  
7           the web browser as a recipient of the asynchronous message; and  
8           message providing means for providing the asynchronous message to the web  
9           server.

1       48. The system of claim 47 further comprising:  
2           storing means for storing a reference to a callback function with information  
3           from the wait request; and  
4           using means for using the reference to call the callback function when the  
5           asynchronous message is provided to the web server, wherein the  
6           callback function pushes the asynchronous message.

1       49. The system of claim 48 further comprising:  
2           context providing means for providing the callback function with context  
3           information, the context information identifying the web browser.

1       50. The system of claim 47 further comprising:  
2           assigning means for assigning the wait request to a connection between the  
3           web server and a business process server; and  
4           listening means for listening to the connection for the asynchronous message.

1       51. The system of claim 45 wherein the pushing means comprise:  
2           calling means for calling a callback function associated with the web browser  
3               when the asynchronous message is received, wherein the callback  
4               function pushes the asynchronous message.

1       52. The system of claim 51 further comprising:  
2           reference storing means for storing a reference to the callback function; and  
3           reference using means for using the reference for calling the callback function.

1       53. The system of claim 52 further comprising:  
2           context storing means for storing a second reference to context information,  
3               the context information identifying the web browser; and  
4           context using means for using the second reference for providing the context  
5               information to the callback function.

1       54. The system of claim 45 further comprising:  
2           user interface changing means configured to perform at least one of a group  
3               consisting of the following:  
4               cause a first user interface object to move to visually capture a user's  
5               attention;  
6               cause a second user interface object to issue a sound to capture the  
7               user's attention;  
8               present a screen pop of data; and  
9               bring a web browser window to front of screen.

1       55. A system comprising:  
2           controlling means for controlling a user interface presented by a web browser  
3               comprising:  
4               registering means for registering the web browser as available to  
5               receive an asynchronous message, wherein  
6               the web browser is not blocked waiting for the  
7               asynchronous message;

8           and

9           pushing means for causing a web server to push the asynchronous  
10           message to the web browser, wherein the web browser presents  
11           a user interface change in response to the asynchronous  
12           message.

1       56.    A signal embodied in a carrier wave comprising:  
2           controlling instructions to control a user interface presented by a web browser  
3           comprising:  
4           pushing instructions to cause a web server to push an asynchronous  
5           message to the web browser, wherein the web browser presents  
6           a user interface change in response to the asynchronous  
7           message.

1       57.    A signal embodied in a carrier wave comprising:  
2           controlling instructions to control a user interface presented by a web browser  
3           comprising:  
4           registering instructions to register the web browser as available to  
5           receive an asynchronous message, wherein  
6           the web browser is not blocked waiting for the  
7           asynchronous message;

8           and  
9           pushing instructions to cause a web server to push the asynchronous  
10           message to the web browser, wherein the web browser presents  
11           a user interface change in response to the asynchronous  
12           message.